

What is claimed:

- 1 1. A method of allocating PID values to a program in a digital transport stream,
2 the digital transport stream including at least one program including of a plurality of
3 elementary streams, the method comprising the steps of:
4 (a) assigning a session number to a session, wherein the session is associated
5 with a program having a plurality of elementary streams;
6 (b) associating a PMT_PID value with the session number;
7 (c) assigning a set of PID values to the elementary streams of the program; and
8 (d) indicating in a map of allocable PID values the assigned PID values.
- 1 2. The method of claim 1, further including the step of:
2 associating the session number with an output port, wherein the program that
3 is associated with the session is transmitted from the output port.
4
- 1 3. The method of claim 1, prior to step (a), further including the step of:
2 determining from a map of session numbers an unassigned session number,
3 wherein the unassigned session number is the session number assigned
4 to the session in step (a).
- 1 4. The method of claim 3, wherein the map of session numbers is an array of
2 elements, each element of the array is associated with a session number and has an
3 unassigned state and an assigned state; and further including the step of:
4 when the session number is assigned to the session, indicating the state of the
5 element that is associated with the session number as assigned.
- 1 5. The method of claim 4, wherein the elements of the array are checked based
2 upon their index values in the array, and the element having the lowest index value
3 and an unassigned state is assigned to the session.
- 1 6. The method of claim 3, wherein the map of session numbers is a plurality of
2 arrays, each array of the plurality of arrays is associated with an output port.

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1 7. The method of claim 1, prior to the steps of (a), (b), (c) and (d), further
2 including the step of:

3 receiving a session message having a program indicator included therein,
4 wherein the in response to the session message steps (a), (b) and (c) are
5 implemented to assign a first session number to a first session that is
6 associated with a first program identified by the program identifier,
7 associate a first PMT_PID value to the first session number and assign
8 a first set of PID values to the elementary streams of the first program;
9 and after steps of (a), (b) and (c), further including the step of:
10 transmitting from a device the elementary streams of the program in a digital
11 transport stream.

1 8. The method of claim 7, wherein the device that transmits the program has a
2 plurality of output ports that are adapted to transmit digital transport streams, and the
3 session message further includes an output port identifier that identifies the output
4 port of the plurality of output ports from which the elementary streams of the first
5 program are transmitted.

1 9. The method of claim 8, wherein the first session is associated with the output
2 port identified by the output port identifier.

1 10. The method of claim 9, further including the steps of:
2 receiving a second session message having a second output port identifier and
3 a second program indicator included therein, wherein the second
4 program indicator identifies a second program, wherein the output port
5 identifier identifies an output port, and wherein in response to the
6 second message steps (a), (b) and (c) are implemented to assign a
7 second session number to a second session that is associated with the
8 second program, associate a second PMT_PID value to the second
9 session number and assign a second set of PID values to the
10 elementary streams of the second program; and

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11 transmitting from the output port identified by the second session message the
12 elementary streams of the second program.
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1 11. The method of claim 10, wherein the output port associated with the first
2 session is different from the second output port, the first and second session numbers
3 are the same, and the first and second PMT_PID values are the same.

1 12. The method of claim 10, wherein the first program and the second program are
2 the same program, and the first and second set of PID values assigned to the
3 elementary streams of the program are the same.

1 13. The method of claim 10, wherein the output port associated with the first
2 session is the same as the second output port, and the numerical values of the first and
3 second PMT_PID values are related to the numerical values of the first and second
4 session numbers.

1 14. The method of claim 1, further including the steps of:
2 allocating a first set of PID values for use as PMT_PIDs, wherein only PIDs
3 from the first set of PID values are associated with PMT packets; and
4 allocating a second set of PID values for assignment to elementary streams of
5 programs, wherein only PIDs from the second set of PID values are assigned to
6 elementary streams of a program.

1 15. The method of claim 1, further including the steps of:
2 receiving a session message having a program identifier included therein;
3 determining the number of elementary streams of the identified program, wherein the
4 number of PID values in the set of PID values assigned to the elementary streams of
5 the program is less than or equal to the number of elementary streams of the identified
6 program.

1 16. An apparatus in a digital network that includes a transport stream having a
2 plurality of programs included therein, wherein a program is defined by a set of
3 elementary streams, the apparatus comprising:
4 means for assigning a session number to a session, wherein a session is
5 associated with a program of the transport stream;
6 means for assigning a PMT_PID to the session; and
7 means for allocating a set of PIDs to a set of elementary streams of a program.

1 17. The apparatus of claim 16, wherein the value of the PMT_PID assigned to the
2 session is related to the session number of the session.

1 18. The apparatus of claim 16, wherein the number of PIDs in the set of allocated
2 PIDs is no more than the number of elementary streams of the program.

1 19. The apparatus of claim 16, wherein the set of allocated PIDs have values that
2 are not contiguous.

1 20. The apparatus of claim 16, further including:
2 a plurality of output ports, each output port of the plurality of output ports
3 adapted to transmit a transport stream having at least one program,
4 wherein each program transmitted from an output port is associated
5 with a unique session number.

1 21. The apparatus of claim 20, wherein a first output port of the plurality of output
2 ports transmits a first transport stream, which includes a first program having a first
3 program number associated therewith, a second output port of the plurality of output
4 ports transmits a second transport stream, which includes a second program having a
5 second program number, which is different than the first program number, associated
6 therewith, the first and second programs each having a PMT identified by a PMT_PID
7 value associated therewith, and the first and the second PMTs have the same
8 PMT_PID value.

1 22. The apparatus of claim 21, wherein the first and second programs are the same
2 particular program, and the elementary streams of the particular program have the
3 same PID values in the first and second transport stream.

1 23. The apparatus of claim 20, wherein a first output port of the plurality of output
2 ports transmits a first transport stream, which includes a first program having a
3 program number associated therewith, a second output port of the plurality of output
4 ports transmits a second transport stream, which includes a second program having
5 the program number associated therewith, the first and second programs each having
6 a PMT identified by a PMT_PID value associated therewith, and the first and the
7 second PMTs have the different PMT_PID values.

1 24. The apparatus of claim 23, wherein the first and second programs are the same
2 particular program, and the elementary streams of the particular program have the
3 same PID values in the first and second transport stream.

1 25. The apparatus of claim 20, further including:
2 a first input port adapted to receive a session message having a program
3 identifier and an output port identifier included therein, wherein the
4 output port identifier identifies an output port of the plurality of output
5 ports;
6 a second input port in communication with the plurality of output ports, the
7 second input port adapted to receive a transport stream having a
8 plurality of programs included therein, wherein the plurality of
9 programs include a first program associated with the program
10 identifier; and
11 wherein the means for assigning a session number uses the session message to assign
12 a session number for a further session associated with the identified output port,
13 thereby including the first program in the transport stream transmitted from the
14 identified output port.

1 26. The apparatus of claim 16, wherein the means for assigning a session number
2 includes a session number map.

1 27. The apparatus of claim 26, wherein the session number map is an array of
2 elements having a first and second state, each element is associated with a session
3 number, the first state representing an unassigned session number and the second state
4 representing an assigned session number

1 28. The apparatus of claim 27, wherein the means for assigning a session number
2 searches the array of elements for an element in the first state and assigns the session
3 number associated with that element to the session, and changes the state of that
4 element of the array to the second state.

1 29. The apparatus of claim 27, wherein each element of the array is associated
2 with a PMT_PID.

1 30. The apparatus of claim 16, further including:
2 a plurality of output ports, each output port adapted to transmit a transport
3 stream therefrom; and
4 wherein the means for assigning session numbers includes a session number map, the
5 session number map including a plurality of arrays, each array associated with an
6 output port of the plurality of output ports.

1 31. The apparatus of claim 30, wherein each array of the plurality of arrays
2 include a plurality of elements, and each element is associated with a PMT_PID
3 value.

1 32. The apparatus of claim 16, wherein the means for allocating a set of PID
2 values includes a PID allocation map.

1 33. The apparatus of claim 32, wherein the PID allocation map includes an array
2 of elements associated with PID numbers.

1 34. The apparatus of claim 32, further including:

2 a plurality of output port, each output port of the plurality of output ports is
 3 adapted to transmit a transport stream having at least one program
 4 included therein; and
 5 wherein the PID allocation map includes a plurality of arrays, each array of the
 6 plurality of arrays including a plurality of elements and each array is associated with
 7 an output port, each element of the plurality of elements is associated with PID
 8 numbers.

1 35. An apparatus in a digital network that includes a transport stream having a
 2 plurality of programs included therein, wherein a program is defined by a set of
 3 elementary streams, the apparatus comprising:
 4 logic adapted to assign a session number to a session, wherein a session is
 5 associated with a program of the transport stream;
 6 logic adapted to assign a PMT_PID to the session; and
 7 logic adapted to allocate a set of PIDs to a set of elementary streams of a
 8 program.

1 36. The apparatus of claim 35, wherein the value of the PMT_PID assigned to the
 2 session is related to the session number of the session.

1 37. The apparatus of claim 35, further including:
 2 an output port adapted to transmit a transport stream having at least one
 3 program, and wherein the logic for assigning a session number
 4 includes a map that associates the session number with the output port.

1 38. The apparatus of claim 35, wherein the logic for assigning a PMT_PID
 2 includes a map of PID values.